III. ENERGY INTENSIVE OPERATIONS IN FEDERAL FACILITIES

A. Energy Consumption and Costs for Energy Intensive Operations

NECPA, as amended, 42 U.S.C. § 8253, allows agencies to exclude from the buildings goal, facilities which house energy intensive activities. The energy consumed in these facilities is reported under the category of excluded/process energy. The reporting of energy used in excluded buildings assures that total Federal energy consumption is monitored.

The designation of excluded buildings is at the discretion of each agency. Currently, 15 agencies are excluding specific facilities from the NECPA goal: the Departments of Agriculture, Commerce, Defense, Energy, Justice, State, Transportation, and the Treasury, the General Services Administration, the National Aeronautics and Space Administration, the National Archives and Records Administration, the Panama Canal Commission, the Social Security Administration, the Tennessee Valley Authority, and the U.S. Information Agency. Lists of the excluded buildings that have been identified by the agencies are included in Appendix D.

Table 8 shows that fuels consumed by excluded/process energy have increased 86.6 percent compared to FY 1985 and decreased 2.2 percent from FY 1995. During FY 1996, the Department of Defense consumed 37.3 trillion Btu of excluded/process energy, 50.3 percent of all excluded/process energy used by the Federal Government.

Some of the fluctuations in consumption of excluded/process energy resulted from agencies changing data collection and reporting procedures. The Social Security Administration began reporting its energy separately from the Department of Health and Human Services in FY 1996 and has elected to exclude check processing facilities as energy intensive. In FY 1994, the Tennessee Valley Authority began reporting electricity used for certain processes of its generating plants. The Department of Justice also commenced reporting energy consumption in its excluded buildings during FY 1994. Increases in consumption of excluded/process energy compared to FY 1985 is also partially attributable to DOD's reallocation, beginning in the FY 1988 reporting year, of energy previously reported in the buildings category to the process category. Also contributing to this increase was the Treasury Department's initial reporting of process energy in FY 1991. Treasury neither reported process energy prior to 1991 nor revised its building energy consumption prior to 1990 to exclude process energy. NASA began reporting process energy in FY 1989 and has revised its prior year data. As a result of the prioritization survey required by Executive Order 12902, NASA redesignated the entire Dryden Flight Research Center, virtually all of the White Sands Test Facility, and many individual facilities at the Goddard Space Flight Center and the Langley Research Center as non-exempt facilities in FY 1996. NASA also redesignated the entire Michoud Assembly Facility as an industrial facility. USIA also began reporting energy under this category in FY 1989. USIA has not reported any process energy consumption for any prior years. GSA began reporting energy in excluded buildings in FY 1990 and has backed out this energy consumption from its FY 1985 buildings data. The Departments of Agriculture and Commerce both began excluding buildings where energy intensive activities occur in FY 1992. USDA revised all of its prior year buildings data back to FY 1985 to reflect the exclusion of the Agricultural Research Service. The Commerce Department revised its FY 1985 base year data only to reflect the exclusion of its energy intense facilities. The State Department and NARA began reporting excluded/process energy in

TABLE 8

FEDERAL ENERGY CONSUMPTION IN EXCLUDED BUILDINGS/PROCESS OPERATIONS

(In Billions of Btu, with Conversions to Millions of Barrels of Oil Equivalent [MBOE], and Petajoules [Joule x 10^{15}])

CIVILIAN AGENCY	FY 1985	FY 1986	FY 1987	FY 1988	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	FY 1996	%CHANGE 85-96	%CHANGE 95-96
DOE	16,401.6	15,439.8	14,929.5	15,239.0	12,581.2	11,649.9	11,541.3	12,657.8	10,900.5	11,000.3	17,236.2	16,876.6	2.9	-2.1
NASA	5,907.2	6,242.2	6,479.8	6,569.7	7,206.4	7,376.6	7,490.8	7,558.5	7,612.9	7,819.0	7,420.2	6,479.4	9.7	-12.7
DOT	2,885.1	3,318.9	3,615.8	3,727.3	3,724.6	3,064.0	3,323.0	4,406.8	4,703.8	2,952.5	2,349.4	3,178.1	10.2	35.3
USDA	1,942.8	1,655.3	1,530.5	1,657.5	2,026.0	2,204.2	2,133.3	1,966.3	2,166.9	2,119.3	2,824.0	2,140.8	10.2	-24.2
DOC	938.6	0.0	0.0	0.0	0.0	0.0	0.0	976.6	770.8	1,110.2	1,627.4	1,823.0	94.2	12.0
TVA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,390.6	1,317.1	1,235.6	0.0	-6.2
GSA	623.6	0.0	0.0	0.0	0.0	160.6	746.2	677.6	994.6	1,060.2	1,213.8	961.0	54.1	-20.8
DOJ	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	668.4	707.8	944.1	0.0	33.4
USIA	0.0	0.0	0.0	0.0	1,354.4	1,406.9	850.6	828.5	796.8	861.1	878.2	936.2	0.0	6.6
TRSY	0.0	0.0	0.0	0.0	0.0	0.0	1,026.8	814.1	923.7	771.8	941.0	928.3	0.0	-1.3
NARA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	274.7	610.7	792.2	562.9	0.0	-28.9
ST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	337.4	339.4	344.4	364.1	0.0	5.7
PCC	167.2	179.2	185.7	190.0	187.6	190.8	197.1	193.9	197.5	201.3	209.4	218.6	30.7	4.4
SSA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	215.5	0.0	0.0
CIVILIAN AGENCIES TOTAL														
BBTU	28,866.0	26,835.4	26,741.3	27,383.5	27,080.2	26,052.9	27,309.0	30,080.1	29,679.5	30,904.6	37,861.0	36,864.3	27.7	-2.6
DOD	10,857.2	11,449.9	11,890.3	42,284.8	36,792.9	39,209.1	56,372.1	67,913.1	41,159.3	39,781.4	37,962.6	37,260.1	243.2	-1.9
ALL AGENCIES TOTAL														
BBTU	39,723.2	38,285.3	38,631.6	69,668.3	63,873.1	65,262.1	83,681.1	97,993.2	70,838.9	70,686.0	75,823.5	74,124.4	86.6	-2.2
MBOE	6.8	6.6	6.6	12.0	11.0	11.2	14.4	16.8	12.2	12.1	13.0	12.7		
Petajoules	41.9	40.4	40.8	73.5	67.4	68.8	88.3	103.4	74.7	74.6	80.0	78.2		

DATA AS OF 12/05/97

Note: This table uses a conversion factor for electricity of 3,412 Btu per kilowatt hour.
Sum of components may not equal total due to independent rounding.

Source: Federal Agency Annual Energy Management Data Reports

FY 1993 and have not revised data for any prior years. The Justice Department commenced reporting of excluded buildings in FY 1994 and has not revised data for any prior years.

Energy used in energy intensive operations accounts for approximately 6.7 percent of the total 1.11 quads used by the Federal Government. Electricity constitutes 47.0 percent of the energy used in energy intensive operations, 35.2 percent is accounted for by natural gas, 6.9 percent by coal, and 7.7 percent by fuel oil. Small amounts of purchased steam, liquefied petroleum gas (LPG)/propane, and "other" energy account for the remaining 3.2 percent.

The energy used in energy intensive operations in FY 1996 accounted for approximately 8.3 percent of the total Federal energy bill. Table 9 shows that the Federal Government spent approximately $635.8 million for excluded/process energy during the fiscal year. The combined cost of excluded/process energy in FY 1996 was $8.58 per million Btu, up 8.1 percent from the combined cost of $7.93 reported in FY 1995 (see Appendix C).

B. Statutory Background and Progress Toward Goals for Industrial Facilities

Under section 543(a)(2) of NECPA, as amended by EPACT, 42 U.S.C. § 8253, buildings that house energy-intensive activities may be excluded from NECPA's performance goal for buildings. These buildings are listed in Appendix D. Most energy used in excluded buildings is process energy. Process energy is consumed in industrial operations, certain R&D activities, and in electronic-intensive facilities.

Executive Order 12759 expanded the scope of Federal energy management activities beyond the NECPA mandates by establishing goals for industrial operations. It required industrial facilities to increase energy efficiency by at least 20 percent by FY 2000 in comparison to FY 1985 to the extent that measures undertaken are cost-effective and minimize life-cycle costs. Executive Order 12902 changes this goal to require an increase in energy efficiency by at least 20 percent by 2005 as compared to 1990. Measures undertaken to achieve this goal must be cost-effective, and agencies are also directed to implement all cost-effective water conservation projects. The Executive Order goal applies to certain buildings currently excluded under NECPA where industrial operations are performed. During FY 1994, a working group of the Interagency Energy Management Task Force concentrated efforts on developing appropriate indicators for measuring performance under this goal.

The Department of Defense excludes two types of energy from the NECPA performance goal: process energy and "cold iron" energy. Process energy is used in facilities that perform production or industrial functions. "Cold iron" energy is used to supply power to Navy ships docked in port. Both types of energy are included in this report under the category of excluded/process.

The Department of Energy reports its use of metered energy in extensive experimental research and production processes under excluded/process energy. The metered process energy used by DOE includes energy consumed in: production nuclear reactors, industrial-type operations for weapons and nuclear fuel production, and research and development facilities such as experimental nuclear reactors and linear accelerators. Excluded/process energy totaled 16.9 trillion Btu in FY 1996, which represents 38.0 percent of all energy consumed by DOE. The use

TABLE 9
DEFENSE AND CIVILIAN FEDERAL COSTS FOR EXCLUDED BUILDINGS/ PROCESS ENERGY IN FY 1996
(In Millions of Dollars)

	ELECTRICITY	FUEL OIL	NATURAL GAS	LPG/ PROPANE	COAL	PURCHASED STEAM	OTHER	TOTAL
DEFENSE[1]	209.067	13.344	34.809	0.344	8.907	5.314	0.000	271.785
CIVILIAN[2]	306.453	9.171	35.748	0.966	0.678	10.096	0.853	363.966
TOTAL	515.520	22.515	70.557	1.310	9.585	15.410	0.853	635.751

AVERAGE COST PER UNIT, BASED ON REPORTS FROM AGENCIES

ELECTRICITY	=	50.52	/	MWH
FUEL OIL	=	0.55	/	GALLON
NATURAL GAS	=	2.79	/	THOUSAND CUBIC FEET
LPG/PROPANE	=	0.53	/	GALLON
COAL	=	45.77	/	SHORT TON
PURCHASED STEAM	=	7.31	/	MILLION BTU
OTHER	=	12.42	/	MILLION BTU

DATA AS OF 12/05/97

[1]Includes DOD costs for process and cold iron energy.

[2]Includes DOE costs for metered process energy and energy costs for buildings excluded from performance measurement by DOC, DOJ, DOT, GSA, NASA, NARA, PCC, SSA, STATE, TRSY, TVA, USDA, and USIA.

Note: Sum of components may not equal total due to independent rounding.

Source: Annual energy cost data submitted to DOE by Federal agencies.

of excluded process energy by DOE in FY 1996 was 2.9 percent more than in FY 1985, and 2.1 percent less than FY 1995.

NASA excludes from the NECPA performance goal facilities which fall under its definition of mission-variable facilities. These highly specialized, energy-intensive facilities house space science experimental and testing activities, as well as some industrial operations. Examples of these facilities include wind tunnels driven by multi-thousand horsepower electric motors, launch facilities, space simulation chambers, space communication facilities, and research analysis centers. The Michoud Assembly Facility (MAF), which manufactures the Space Shuttle external tank, is the only NASA facility subject to the Executive Order goal for industrial facilities. MAF selected billion Btu (BBtu) per external tank as its industrial energy metric. In the FY 1990 baseline year, MAF total energy consumption was 925.8 BBtu at a production rate of 4.6 external tanks per year, or 201.3 BBtu/external tank. In FY 1996, MAF total energy consumption was 947.3 BBtu at a production rate of 7.3 external tanks per year, or 129.8 BBtu/external tank. This represents a 35.5 percent reduction in energy consumption per external tank produced and an energy efficiency improvement of 55.1 percent.

The Department of Commerce excludes buildings operated by three of its agencies: the National Institute of Standards and Technology (NIST), the National Oceanic and Atmospheric Administration (NOAA), and the Bureau of the Census. NIST installations have been excluded because they are comprised of general purpose and special laboratories that require constant environmental space control and base electrical loads for scientific equipment and computer systems. NOAA Weather Service facilities operate 24 hours a day and consist of radar towers, computers, special gauges, meters and other sophisticated equipment. Marine Fisheries and Laboratories conduct marine biology research and utilize refrigerators, freezers, incubators, coolers, seawater pumps, and compressors that operate 24 hours a day. The Bureau of Census Charlotte Computer Center is a leased facility and is used solely as a computer center. The building is operated 24 hours a day.

Within the Department of Transportation, the Federal Aviation Administration excludes all buildings involved in implementing the National Airspace System Plan. These buildings house energy-intensive electronic equipment with the associated HVAC requirements to maintain an environment for reliable equipment operation.

The U.S. Information Agency designates domestic and overseas Voice of America Relay Stations as energy-intensive facilities and reports this consumption as process energy excluded from the NECPA performance goal.

A substantial amount of the Panama Canal Commission energy consumption is dedicated to process functions, primarily comprising the locks, industrial, and other canal ancillary or support facilities.

The GSA excludes from the NECPA performance goal those buildings and facilities where energy usage is skewed significantly due to reasons such as: buildings entering or leaving the inventory during the year; buildings down-scaled operationally to prepare for disposal; buildings undergoing major renovation and/or major asbestos removal; or buildings functions like that of outside parking garages which consume essentially only lighting energy, yet are classed as buildings.

GSA's excluded buildings, due to these factors, could distort GSA's actual progress toward meeting the energy reduction goal.

Energy reported by the Treasury Department under the category of excluded/process energy is comprised mainly of industrial energy consumption by the Bureau of Engraving and Printing and the Mint.

The State Department excludes unique, special-use facilities with special security and operational requirements including the President's guest house, a computer facility, the International Chancery Center, and the Main State Facility.

NARA designates all 12 of its facilities as energy intensive because of stringent records storage requirements which demand that documents and records be maintained in a controlled environment 24 hours per day, 365 days per year.

The Department of Justice excludes the Justice Data Center in Washington, DC, a 24-hour-a-day energy intensive facility and five installations operated by the Federal Bureau of Investigation which operate 24 hours per day. These facilities have limited conservation measures available. Also exempted by the Justice Department are Immigration and Naturalization Service repeater stations located nationwide that house equipment operations only.

The Social Security Administration, which began reporting energy consumption this year as an independent agency, has designated its National Computer Center as an energy intensive facility. The Center contains SSA's main database and query server and operates 24 hours per day and 365 days per year.